



SELECTED ASPECTS OF ENSURING THE ACCESSIBILITY OF HISTORICAL BUILDINGS TO PEOPLE WITH MOBILITY IMPAIRMENTS

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ABSTRACT This chapter is devoted to the problem of providing people with mobility impairments, using wheelchairs or crutches, and the elderly, with access to monumental buildings located in historic public spaces in Poland. Authors present current technical- and construction-related regulations concerning passageway infrastructure and the needs that result from limitations faced by people with mobility impairments. Proposals for solutions to improve accessibility are also presented in visual form, making it easier to understand the proposed solutions and showing examples of ones already applied. The paper addresses the problem of adapting sidewalks, parking spaces and entrances to buildings to specific needs, while following recommendations on conservation issues arising from the protection of cultural heritage and the historical nature of spaces around monuments. Authors of this chapter have long worked on the subject of public spaces' accessibility to people with disabilities, basing on their own experience of wheelchair use. This chapter aims to show historic site administrators how accessibility to historic sites can be improved with minimal intervention and how cultural assets can be made enjoyable to people with special needs.

KEYWORDS: people with disabilities; people with impairments; monuments; accessibility

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1. Introduction

The problem of providing access to historic buildings for disabled people is a difficult issue that is becoming increasingly important. This results from attempts to preserve buildings in their existing state or to renovate them by restoring their previous condition, before the effects of destruction or reconstruction changed their original character. Original constructions do not, in fact, provide for the addition of any facilities for people with mobility impairments, the elderly, people with prams, etc.

In the past, people with disabilities usually remained on the margins of mainstream life, often depending on their family's material support, or begging. Only soldiers injured in wars (and losing a limb) could count on state protection in some countries, serving as prison guards (Bastille-France) or fortress crew (Kłodzko-Prussia).

Therefore, broader adaptation of public spaces and building facilities for people with disabilities was not justified to the extent it is now. Sometimes, only ad hoc adaptations would be made with a specific kind of person in mind. For this reason, adaptation is difficult as it requires some interference with the original state of the facility. Hence, it is necessary to open discussion whether adaptations should be made, and to what extent the historic structure can be adapted to current needs in order to provide access to people with special needs.

2. Access

2.1 What is access

There may be several ways to reach a site: the longer one on foot, or the shorter one, partly overlapping, from a public transport bus or tram stop, since there are more of them and they are closer than railway stations or subway stops. Access can be easier from the public parking lot or the historic site's parking spaces, where coaches, buses, cabs and private cars can stop.

Usually, a public entity such as road authority is the administrator of sidewalks (except for ones maintained by the site) and the organizer of public transportation (stops, railways). Thus, the facility administrator has no direct influence on the technical condition of access areas and their accessibility, but can always request changes to improve it.

Ensuring accessibility arises from national regulations [1, 2, 3] and possibly from additionally local regulations [4]. Facility administrators must also comply with national regulations, but can always increase the degree of accessibility beyond the minimum in the interest of visitors. In addition, when regulations are imprecise, they may make their own interpretations with the intention of further increasing the degree of accessibility.

The scope of ensuring accessibility (entrances and driveways) to historic sites includes the construction of sidewalks and parking spaces, and sometimes even small bridges, e.g. over castle moats.

2.2 Sidewalks

Sidewalks should be wide enough to accommodate transfer of pedestrian traffic as well as people in wheelchairs or with prams. However, in the case of historic buildings located in narrow streets, there is often not enough room for sidewalks as they were never there in the past.

Previously, they would not be made at all or have only minimal width. Such sidewalks often do not meet formal requirements. According to [1, 3], the width should be at least 1.5 m, and according to [4]: 1.8÷2.0 m, which ensures comfortable movement of pedestrians with crutches and people in wheelchairs, allowing them to pass those coming from the opposite direction.

When the width is less than 1.8 m, some regulations, e.g. [4], state that “passing loops” or local extensions should be placed every twenty-five meters, but it is difficult to meet this requirement in the case of historic buildings. It can then be assumed that the function of passing loops is played by exits – otherwise, passing wheelchair users would require one to step into the street.

Slightly different requirements apply to sidewalks that lead pedestrians from the main walkway to the facility door. It may be narrower than is recommended for transit routes. The rationale is that there are fewer people moving on them: in fact, only people specifically interested in entering or exiting, unlike sidewalks that handle regular urban traffic. Therefore, its width may be one meter in the case of sidewalks up to several meters long, and when the sidewalk is up to twenty-five meters long it should be at least 1.25 m. A sidewalk longer than 25 m should be at least 1.5 m wide (and preferably at least 1.8 m), and if this is not possible, local widenings with a minimum length of 1.5 m and width of 1.80 m are necessary, according to [4].

2.3 Stairs and ramps

If there are stairs, it is advisable to construct a ramp to help people in wheelchairs or with prams to overcome differences in levels. However, historic spaces, generally quite narrow, make it virtually impossible to place ramps according to current regulations. The remaining options are either to leave the stairs in place, forcing wheelchair users to travel on the street, or to make a sloping plane (or ramp) with parameters that differ from those currently admissible (especially in terms of the slope).

The use of a lift may be another option, but the installation of such devices on stairs at sidewalks should be avoided as much as the installation of vertical stair lifts. It is possible to combine the ramp with stairs, but this solution has not been adopted in Poland so far (fig. 1).



Fig. 1. Example of a solution not used in Poland – a combination of ramp and stairs in Brussels, Belgium. Photo by K. Kaperczak.

2.4 Finishing touches

Support for moving up the stairs and inclined planes can be provided by handrails placed on the walls of houses or fortified walls (fig. 2). They do not necessarily have to meet the criteria related to the height of placement, but they can meet the condition of facilitated hand support, with the diameter of the grip reduced to 35÷45 mm [4].

a)



b)



Fig. 2. Handrails make movement easier. Possible positions from Tallinn in Estonia: a) defensive wall, b) wall of a house. Photo by K. Kaperczak.

The sidewalk should be hardened and fitted with a level and smooth surface. Remains of historic stone-paved surfaces are often found adjacent to historic buildings. They are uneven and slippery, which makes it difficult for wheelchairs to move around. Sometimes, stone slabs are placed between them to provide more smooth surface area, but they can in turn shift and create faults or thresholds between them, posing the risk of tripping. Ideally, a 1.5-1.8 m wide (at least 1.0 m wide) smooth strip of stone slabs should be added and the complementary paving sett should be cut (fig. 3). If necessary, split paving sett is also acceptable. However, it is absolutely unacceptable to pave the entire width of sidewalks with split stone paving sett (fig. 4)



Fig. 3. The sidewalk composed of smooth stone slabs, cut paving sett and underground infrastructure manholes with smooth covers allows pedestrians to move easily across its entire width; Toruń, Poland (photo by K. Kaperczak).



Fig. 4. Sidewalk pavement made of split paving sett hinders the movement of pedestrians; Ciechocinek, Poland(photo by K. Kaperczak).

3. Access ways

People with mobility impairments usually arrive in cars or buses and very rarely in adapted vehicles. A special card allows them to park in designated places, whose number in public areas is determined in [6]. Parking space for the disabled may not be provided if there are less than five parking spaces, and with 6÷15 parking spaces at least one of greater width should be provided for the arrival of disabled persons. This allows them to park vehicles without limiting options for others. If parking spaces are designated outside the public area, parking rules are determined by the administrator of the historic site. In result, flexible parking rules may be implemented, e.g. based on [7].

The location of designated parking spaces should shorten the distance from the car to the facility. At least one parking space should be designated near the main entrance and in larger parking lots preferably at the entrance gate near the gatehouse, where assistance is offered, or in areas for retail, services or sanitation. The number of spaces should be adjusted to the number of visitors. Parking spaces for the disabled ought to be constructed in accordance with [1, 3] and special marking must be used in accordance with [8]. These spaces are 3.6 x 6.0 m, i.e. increased in size as compared to standard parking spaces, and provide not only comfortable entry but also the ability to open the doors wide and move along the vehicle.

Enlarged dimensions mean that buses carrying people with mobility impairments often stop and park in these spaces. However, increased dimensions of vehicles make the parking space insufficient to deploy an access ramp at the rear of the vehicle for wheelchair access. Regulations do not forbid increasing the length of parking spaces (e.g., according to [4] it is: 3,6 x 9,0 m), but no such parking spaces have been made so far.

In historic areas it is often required that the historic pavement be left in place or that new pavement be made, matching the character of the area. However, such pavement, e.g. stone blocks, is not advisable for parking spaces (fig. 5).

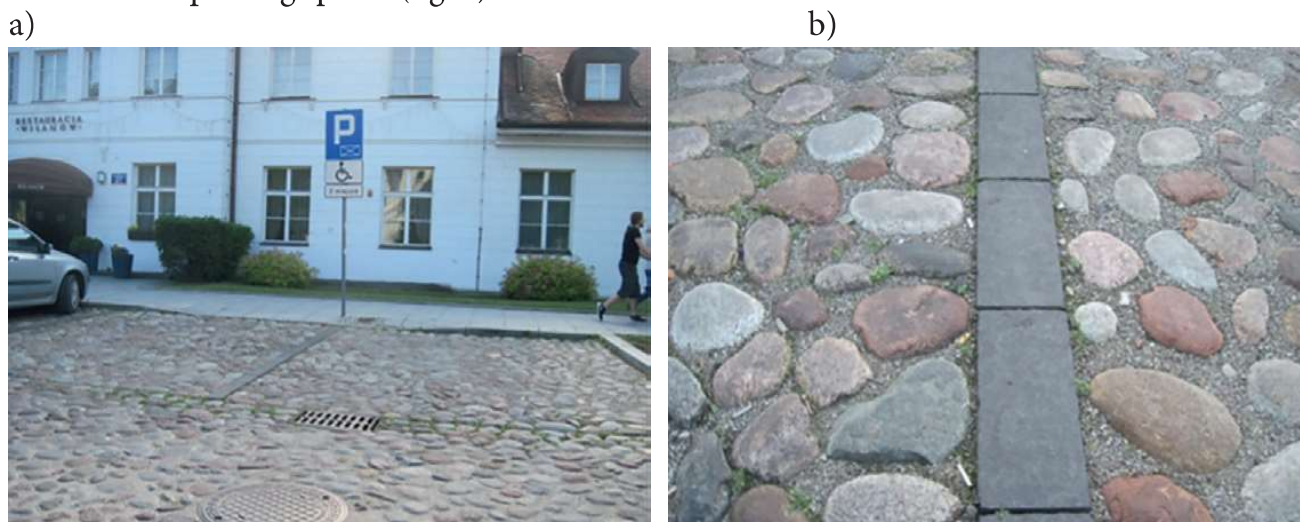


Fig. 5. Parking spaces paved with field stones make it difficult to move as well as enter and exit the vehicle; Warsaw, Poland (photo by K. Kaperczak).

Gaps between stones cause the wheelchair to shake, with wheels bumping into them and blocking the wheelchair's ability to move. When entering or exiting the vehicle, this makes it difficult to position the wheelchair alongside the car door. On uneven surfaces, tips of crutches slip and may be stuck in gaps. Historic stone pavements are often slippery as a result of long use. The danger of slipping is further increased when the pavement is wet or muddy.

Horizontal markings are difficult to paint on stone pavements, especially the blue "parking envelopes." For this reason, designers and administrators prefer that parking space be designated on asphalt or concrete, despite the historic nature of the space, to make marking possible and facilitate movement of people with mobility impairments, especially with regard to entering and exiting vehicles, manoeuvring wheelchairs, and walking on crutches.

In view of the necessity to maintain historic stone paving, its special adaptation may be a compromise solution. Replacing split paving sett with cut paving sett (fig. 6) or levelling (grinding down) the contour, along with making joints between stones level with stone surfaces. In terms of marking, an additional solution may be to use a relief with the symbol of a wheelchair, which would replace paint, which can fade (fig. 7).



Fig. 6. Changing the pavement of a parking space for the disabled from split paving sett to smooth paving sett in Zakopane, Poland (photo by K. Kaperczak).

If the parking lot pavement is made of openwork panels (EKO), the parking space for the disabled, along with the access way, should have a solid and smooth surface. The element that ensures efficient movement is the combination of parking space and sidewalk. Ideally, the

parking space should be made at the sidewalk level (fig. 8). Otherwise, the following solutions could be implemented:

- cul de sac (fig. 9),
- lowering the entire side or front edge (fig. 10),
- partial lowering of the sidewalk or raising the parking space pavement (fig. 11).



Fig. 7. Reliefs with the disability symbol on parking spaces as an alternative means of indicating who they are designated for when painted markings are missing; Zandvoord and Haarlem, the Netherlands (photo by K. Kaperczak).



Fig. 8. Parking spaces made at the level of the adjacent sidewalk do not require overcoming height differences (faults) when accessing vehicles; Warsaw, Poland (photo by K. Kaperczak).

a)



b)



Fig. 9. Parking spaces accessed via a cul de sac (sidewalk access ways), a) Debrecen, Hungary, b) Warsaw, Poland (photo by K. Kaperczak).



Fig. 10. Access to parking spaces afforded by lowering the sidewalk to the level of the parking spaces along the entire length of the front or side; Warsaw, Poland (photo by K. Kaperczak).



Fig. 11. Access to parking space through a partly lowered section of the sidewalk or parking space pavement: a) Warsaw, Poland, b) Rønne, Bornholm, Denmark (photo by K. Kaperczak).

In practice, pavements are reluctantly lowered as this facilitates the formation of depressions, where water accumulates, creating hazard in winter.

4. **Entry to the building**

Typically, the vast majority of entrances to historic buildings have several steps or at least a high threshold. The optimal solution is to remove them or convert them into ramps. If this is not possible, a ramp can be built or a crane added. If this is not feasible as well, a ramp or a detachable wooden or steel inclined access way can be provided. With a low elevation and usually a single run, the running plane is made of a solid surface such as corrugated sheet (figs 12-13). With several runs, the plane is generally openwork (fig. 14).



Fig. 12. Access to the building entrance with a ramp (without handrails) with a solid, corrugated running surface; Venice, Italy (photo by K. Kaperczak).



Fig. 13. Access to the building entrance with a ramp (with handrails) with a solid, corrugated and smooth running surface; Venice, Italy (photo by K. Kaperczak).

a)



b)



Fig. 14. Openwork inclined plane made of gratings: a) Tøinec, the Czech Republic, b) Trans-Olza, the Czech Republic (photo by K. Kaperczak).

Handrails can be used depending on the height difference (greater than 0.5 m). Lift equipment can be used in the form of a shaft attached directly to the stairs or the building wall (fig. 15) or placed underground, leading to the facility via an underground passage (fig. 16). In each case, the choice of adaptation method is determined by local conditions, changing which is very reluctantly accepted by those who take care of monuments.



Fig. 15. Passenger lift shaft added to the building wall (Main Building of the Warsaw University of Technology); Warsaw, Poland (photo by K. Kaperczak).



Fig. 16. Underground passenger lift, which takes the disabled person to an underground corridor; Zwinger Palace, Dresden, Germany (photo by K. Kaperczak).

Therefore, accepted inclinations and cross-sections of ramps as well as their surface do not necessarily meet the requirements defined in regulations, although, as shown in [5], an inclination of 13% can be acceptable to people in wheelchairs in some situations. Likewise, in the case of lifting machinery, the size and equipment of cabins do not always meet regulatory requirements. Compromise is necessary, but it should be recognized that the implementation of elements that improve the accessibility of facilities for people with mobility impairment is always desirable as it attracts visitors to historic sites.

5. Resting places

Areas adjacent to historic buildings often serve as recreation and leisure zones. The surface of sidewalks or alleys may be paved, but should be limited to the main sidewalks. At least a third of all benches should have backrests and armrests as well as provide shade in some form, e.g. through a canopy [4].

If picnic tables are set up, at least one should be adapted for people in wheelchairs, with free space at the table and wheelchair access. There is also a recommended maximum height of the table top (80 cm) and the height of the space under the table (at least 70 cm), with the depth of at least 60 cm.

Water features should have dual water discharge nozzles, one at the height of 75÷90 cm [4], allowing a person in a wheelchair to use them.

If the recreation area includes a viewing terrace, in addition to providing access by ramp or passenger lift it should also provide the possibility of visual observation, while railings protecting against falling should be openwork or glazed.

As for catering, service and sanitary facilities, all premises should be adapted to the needs of people with mobility impairments, specifically regarding entrances without thresholds, with ramps or a lifting device.

At least one toilet cubicle should be adapted to the needs of disabled people in terms of size and equipment according to [3], possibly additionally according to [4]. A Toi-Toi toilet should not be considered an adapted toilet.

Frequently, a baby changing station is placed in a restroom for the disabled due to its larger space. Recently, in some restrooms there is also a changing table for adults (dependents who require hygienic care while lying down). This is very important for the latter but requires a larger toilet area of at least 12 m².

In addition, toilet facilities should include not only bowls, sinks and trashcans but must also be fitted with a shower and a lift to reach it, either hand-operated or electric. A changing table can also feature an electric lift [9].

Toilets for disabled fitted with adult changing station should not be combined with a baby changing station. The relatively long time of performing sanitary and hygienic activities by people with disabilities means longer waiting time, which can increase tension and cause conflict.

It is more advantageous to place adapted toilets separately in men's and women's toilet sections. The baby changing station should be rather placed in women's restrooms, while the adult changing stations – in men's. With respect to persons with mobility impairments, gender assignment of restrooms is not an obstacle and should be considered only conventional.

Summary

The problem of ensuring accessibility at historic sites is not trivial, especially for people with special needs who have difficulty accessing many cultural assets because of their external or internal characteristics, or because of the circumstances in which they find themselves. At the same time, the solutions that have already been developed to improve accessibility often come into conflict with requirements of preservation. It is therefore necessary to reach compromise solutions, on the one hand improving the accessibility of historic buildings, and on the other – balancing needs to make everything accessible to everyone.

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